



ORAU TEAM Dose Reconstruction Project for NIOSH

Oak Ridge Associated Universities | Dade Moeller | MJW Technical Services

Page 1 of 39

DOE Review Release 05/03/2011

Document Title: Internal Dosimetry Organ, External Dosimetry Organ, and IREP Model Selection by ICD-9 Code	Document Number: ORAUT-OTIB-0005 Revision: 04 Effective Date: 04/18/2011 Type of Document: OTIB Supersedes: Revision 03	
Subject Expert(s): Scott R. Siebert		
Approval:	<u>Signature on File</u> Edward F. Maher, Document Owner	Concurrence Date: <u>04/14/2011</u>
Concurrence:	<u>Signature on File</u> Kate Kimpan, Project Director	Concurrence Date: <u>04/18/2011</u>
Approval:	<u>Signature on File</u> James W. Neton, Associate Director for Science	Approval Date: <u>04/18/2011</u>

New
 Total Rewrite
 Revision
 Page Change

FOR DOCUMENTS MARKED AS A TOTAL REWRITE, REVISION, OR PAGE CHANGE, REPLACE THE PRIOR REVISION AND DISCARD / DESTROY ALL COPIES OF THE PRIOR REVISION.

PUBLICATION RECORD

EFFECTIVE DATE	REVISION NUMBER	DESCRIPTION
11/03/2003	00	ORAU technical information bulletin to clarify IMBA organ and IREP model selection First approved issue. Initiated by Elizabeth M. Brackett.
01/23/2004	01	Incorporates applicable external dosimetry organ selection. Approved issue of Revision 01. Initiated by Elizabeth M. Brackett.
03/05/2004	01 PC-1	IREP model correction for ICD-9 code 238.7 (added Bone model), remove IMBA/External/IREP model info from header rows for ICD-9 codes 194 and 205. Approved issue of page change 1. Initiated by Elizabeth M. Brackett.
05/07/2004	01 PC-2	IMBA and External model correction for ICD-9 code 231.8 (changed to med review on page 15), IMBA model correction for ICD-9 codes 235.8 and 235.9 (changed to med review on page 16), External model correction for ICD-9 code 185 (changed to bladder on page 8). Approved issue of page change 2. Initiated by Elizabeth M. Brackett.
10/29/2004	01 PC-3	IMBA model correction for ICD-9 code 189.2, 189.3, and 189.4 (changed to highest non-met organ/tissue on page 9), added footnote number 5 to Table 1 for ICD-9 code 232 on page 18. Changed DOL documentation to NIOSH Referral Summary Document (NRSD) on page 20. Approved issue of page change 3. Initiated by Scott R. Siebert.
12/02/2005	02	Adds information for ICD-9 codes 289.7 and 289.9, clarifies handling adenocarcinoma of the distal (lower third) esophagus, corrects external organ for ICD-9 codes 233.4 and 236.5, updates correct model selections for various cancers (to reflect guidance in OCAS TIB-012, except as directed by OCAS to mark many 200-204 organs as "Reserved"), adds likely primary cancer selection for secondary cancers. Changes references to "IMBA organ" to "Internal Dosimetry organ." Approved issue of Revision 02. Training required: As determined by the Task Manager. Initiated by Scott R. Siebert.
02/10/2006	02 PC-1	Approved page change revision. Updates Table 3-1 (pages 15 – 22) in Section 3.2 to reflect guidance in OCAS-TIB-012 Rev 1 (internal and external organs for ICD-9 series 200 through 204 changed from "Reserved" to the specified organ) and changes OCAS-TIB-012 issue date and revision number in reference section (page 33). No sections were deleted. Training required: As determined by the Task Manager. Initiated by Scott R. Siebert.
02/26/2010	03	Adds discussion of ICD-9 vs. ICD-9-CM in Background section, adds codes into Table 3-1 and 3-2 that cross-reference to ICD-9-CM codes, adds clarification for skin cancer codes, updates organ selection for ICD-9 codes 155 and 156, adds clarification that this OTIB is not applicable for x-ray procedures. No sections were deleted. Incorporates formal internal and NIOSH review comments. Constitutes a total rewrite of the document. Training required: As determined by the Objective Manager. Initiated by Scott R. Siebert.

04/18/2011	04	Changes external organ for ICD-9 codes 194.1 and 194.5 to Thyroid only (rather than Thyroid/Remainder), adds BCC as an IREP model option for ICD-9 code 232, changes internal organ from Medical Review to Skin for 238.2, add SCC as an IREP model option for 238.2, updates footnote "e" to include ICD-9 code 238.2 and BCC, update the internal organ from "Medical Review" to a specific organ of interest for 236.91 (Kidney), 238.0 (Bone surface), 238.3 (Breast), 239.2 (Bone surface or Skin depending on cancer type). Additional change to 238.0 and 239.2(bone) based on formal internal review comments – both changed to bone surface for internal and external organs. Additional change to add SCC as viable IREP model for 239.2(skin) based on formal NIOSH review. Training required: As determined by the Objective Manager. Initiated by Scott R. Siebert.
------------	----	--

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
Acronyms and Abbreviations		5
1.0 Purpose		6
2.0 Background.....		6
3.0 Guidance		7
3.1 Selection of Appropriate Organs, Tissues, and Models.....		7
3.2 Secondary Cancers with Unknown Primary Cancer Site.....		7
4.0 Discussion		7
4.1 Highest Non-Metabolic Organ.....		7
4.2 Medical Review		8
4.3 Thyroid or Remainder Selection for External Dose		8
4.4 Remainder Selection for External Dose		8
4.5 Bladder.....		8
4.6 Multiple IREP Models		8
4.7 Skin Cancer Model Clarification.....		9
4.8 Adenocarcinoma of the Distal (Lower Third) Esophagus		9
4.9 Secondary Cancers – Likely Primary Cancer Sites with Multiple IMBA, External, and IREP Organ Model Options		9
4.10 Multiple Secondary Cancers with Unknown Primary Cancer Site or Multiple Primary and Secondary Cancers		9
References		39

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
3-1.	Selection of organs, tissues, and IREP models for internal and external dose reconstruction based on ICD-9 code	11
3-2	Selection of primary cancer(s) from secondary cancer codes	38

ACRONYMS AND ABBREVIATIONS

BB	Bronchial region
CLL	chronic lymphocytic leukemia
DHHS	U.S. Department of Health and Human Services
DOL	U.S. Department of Labor
EEOICPA	Energy Employees Occupational Illness Compensation Program Act of 2000
ET1	Extrathoracic region 1
ET2	Extrathoracic region 2
ICD-9	<i>The International Classification of Diseases, 9th Revision</i>
ICD-9-CM	<i>The International Classification of Diseases, 9th Revision, Clinical Modification</i>
ICRP	International Commission on Radiological Protection
IMBA	Integrated Modules for Bioassay Analysis
IREP	Interactive RadioEpidemiological Program
LLI	lower large intestine
LN(ET)	Extrathoracic lymph nodes
LN(TH)	Thoracic lymph nodes
NCHS	National Center for Health Statistics
NIOSH	National Institute for Occupational Safety and Health
OCAS	Office of Compensation Analysis and Support
ORAU	Oak Ridge Associated Universities
POC	probability of causation
SI	small intestine
TIB	technical information bulletin
ULI	upper large intestine
U.S.C.	United States Code
WHO	World Health Organization
§	section or sections

1.0 PURPOSE

Technical information bulletins (TIBs) are not official determinations made by the National Institute for Occupational Safety and Health (NIOSH) but are rather general working documents that provide historic background information and guidance to assist in the preparation of dose reconstructions at particular sites or categories of sites. They will be revised in the event additional relevant information is obtained about the affected site(s). TIBs may be used to assist NIOSH staff in the completion of individual dose reconstructions.

In this document, the word “facility” is used as a general term for an area, building, or group of buildings that served a specific purpose at a site. It does not necessarily connote an “atomic weapons employer facility” or a “Department of Energy facility” as defined in the Energy Employees Occupational Illness Compensation Program Act of 2000 [EEOICPA; 42 U.S.C. § 7384l(5) and (12)].

This TIB provides guidance on selection of (1) the appropriate International Commission on Radiological Protection (ICRP) organ or tissue model to estimate the internal dose for specific codes from the World Health Organization’s (WHO) *International Classification of Diseases, Ninth Revision* (ICD-9; WHO 1977), (2) the appropriate organs or tissues to estimate external dose, and (3) the appropriate model in the Interactive RadioEpidemiological Program (IREP). This TIB also provides information for selecting and assessing likely primary cancers for secondary cancers.

This TIB does not address the appropriate organ to use with medical X-ray procedures due to different potential exposure geometries of those procedures. The organs to be used for dose reconstruction from medical X-ray procedures can be found in ORAUT-OTIB-0006, *Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures* (ORAUT 2005), or the site-specific technical basis documents and site profiles.

2.0 BACKGROUND

Under EEOICPA, the organs or tissues for which doses must be estimated are those that are delineated by the specified ICD-9 code that is received from the U.S. Department of Labor (DOL). While many ICD-9 codes are clear in their intended organ or tissue, additional guidance is necessary to identify the appropriate organs or tissues for internal and external dose estimation and the IREP model to use for the organ or tissue. This TIB designates the appropriate internal dosimetry organ and tissue selection for the various ICD-9 coded cancers, the appropriate organs and tissues to estimate external dose, and the appropriate IREP model.

Coding of the cancers is conducted by DOL on the basis of ICD-9. The U.S. Department of Health and Human Services (DHHS) National Center for Health Statistics (NCHS) has issued a related document, *International Classification of Diseases, Ninth Edition, Clinical Modification* (ICD-9-CM; DHHS 2008), which is widely used in the United States. ICD-9-CM is revised on an annual basis. Although the WHO has issued Revision 10 of the ICD, DHHS has not yet adopted it. Although the ICD-9-CM coding provides detail that is not in ICD-9, this has not historically been required for assessment under EEOICPA. However, because ICD-9-CM is widely used in the United States, DOL might provide some codes that did not appear in earlier versions of this TIB. NCHS provides a conversion table for translating a new code to its previous code (DHHS 2009). This table has been used to add codes to Tables 3-1 and 3-2, which appear after the text of this document. Due to the complexity of determining the appropriate organs for lymphatic/hematopoietic cancers, the NIOSH Division of Compensation Analysis and Support (previously the Office of Compensation Analysis and Support or OCAS) conducted a comprehensive review of the state of knowledge regarding the etiology and diagnosis of the various lymphomas, leukemias, and multiple myeloma. This TIB incorporates the findings from this review as set forth in OCAS-TIB-012, *Selection for Internal and External Dosimetry Target Organs for Lymphatic/Hematopoietic Cancers* (NIOSH 2006).

3.0 **GUIDANCE**

3.1 **SELECTION OF APPROPRIATE ORGANS, TISSUES, AND MODELS**

Table 3-1 correlates ICD-9 codes to the appropriate organ and tissue selection for internal and external dose estimation and to the appropriate IREP model. Organs and tissues that are labeled "Highest non-met org/tiss" indicate that dose to the highest nonmetabolic organ is to be used to represent the dose to the ICD-9 designated organ or tissue. A discussion of this term is included in Section 4.0. The remaining regions are described by the term in the Integrated Modules for Bioassay Analysis (IMBA) software program.

3.2 **SECONDARY CANCERS WITH UNKNOWN PRIMARY CANCER SITE**

Another situation that needs to be assessed is the diagnosis of a secondary cancer with an unknown primary cancer location. It is accepted in medicine that cancer-causing agents such as ionizing radiation produce primary cancers. This means, for a case in which the primary site of cancer is unknown, that the primary site must be established by inference to establish the probability of causation (POC). For each secondary cancer, the set of primary cancers that produced approximately 75% of that secondary cancer among the U.S. population was identified (males and females were considered separately). Therefore, for secondary cancers with unknown primary sites, Table 3-2 should be consulted to select likely primary sites, which should then be evaluated using IREP (reproduced from Table 7 in the IREP technical documentation).

Because each secondary cancer in Table 3-2 has more than one likely primary cancer site, each likely primary site must be evaluated using IREP to determine a POC. If one of the likely primary cancer sites yields a POC greater than or equal to 50%, this site should be assumed to be the originating site for the secondary cancer and should be submitted as such.

If none of the likely primary cancer sites yields a POC greater than or equal to 50%, the supporting documentation for all of them should be submitted, demonstrating that all were less than 50%.

4.0 **DISCUSSION**

4.1 **HIGHEST NONMETABOLIC ORGAN**

The dose estimate for a number of tissues is based on the highest nonmetabolic organ dose, which is designated as "Highest non-met org/tiss" in the table. Metabolic organs are those that are specifically modeled by the ICRP for a particular element. The biokinetic models are based on the behavior of the particular element in the body, so the metabolic organs vary with the element of interest. The metabolic organs include the gastrointestinal tract from ICRP Publication 30 (ICRP 1979) and, in the case of inhalation, the respiratory tract from ICRP Publication 66 (ICRP 1994).

For radionuclides that primarily emit alpha or beta radiation, the soft tissue compartment becomes the primary recipient of dose. This compartment contains all the organs that are not specifically accounted for in the metabolic model. This compartment accounts for the dose that is delivered by material that is actually deposited in that tissue. An additional source of exposure to the tissue is known as photon cross-irradiation. Cross-irradiation is the exposure to a tissue from photons that originate in other tissues.

When the energy that is emitted by a radionuclide is primarily alpha or beta radiation, the soft tissue compartment becomes the primary source of dose. Under this scenario most of the nonmetabolic organs receive the same dose. For radionuclides where photon emissions are a major source of energy emitted, the nonmetabolic organ doses can vary due to their relative proximity to the metabolic

organs in which the radionuclides concentrate. IMBA calculates the dose from both sources of irradiation and sums them. For many radionuclides (predominately alpha and beta emitters), this causes only minor differences in doses to nonmetabolic organs, so choosing the highest is a realistic assumption with only minor (if any) overestimation.

It is conceivable that a situation could arise in which a photon-emitting radionuclide causes a large difference in doses that are delivered to nonmetabolic organs. In accordance with OCAS-IG-002, *Internal Dose Reconstruction Implementation Guideline* (NIOSH 2002), it is acceptable in these situations to base the dose on an organ that is not the highest nonmetabolic organ. The choice in these cases should be based on the proximity of the model organ to the actual organ of interest.

4.2 MEDICAL REVIEW

Due to the complexity of determining the appropriate organs and tissues for some ICD-9 code cancers, a medical review by an Oak Ridge Associated Universities (ORAU) Team physician is required to determine the organs and tissues to use in IMBA for those cancers. These cancers have been designated in Table 3-1 as "Medical review." The ORAU Team physician will recommend to the dose reconstructor the appropriate organs and tissues for dose estimation purposes.

4.3 THYROID OR REMAINDER SELECTION FOR EXTERNAL DOSE

For cancer sites where Table 3-1 lists "Thyroid/Remainder" for the external organ selection, there is no external dose model for the organ of interest and the organ is in proximity to the thyroid. The thyroid has higher organ dose conversion factors than the remainder selection, which maximizes the dose. If a more realistic dose assessment is required rather than a maximizing dose assessment, the remainder organ should be selected to calculate dose.

4.4 REMAINDER SELECTION FOR EXTERNAL DOSE

If there are cancers of multiple organs or the cancer site is unknown, the remainder organ should be selected as the model to apply dose. However, if the organ location can be determined through the medical records or a medical review, an organ in physical proximity should be selected. The remainder selection provides an estimate of dose that is favorable to the claimant.

4.5 BLADDER

If Table 3-1 lists "Bladder" with no modifier, this represents the urinary bladder. If the organ of interest is the gallbladder, "Gallbladder" is specified clearly.

4.6 MULTIPLE IREP MODELS

If Table 3-1 lists multiple IREP models for a given cancer type, the IREP model(s) to be run is determined based on the use of the words "OR" and "AND" in the IREP Model column.

For multiple IREP models that are connected by "OR", only the model that best fits the actual cancer type should be selected and run in IREP. For example, ICD-9 code 173.0 is listed as "Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell" in the IREP Model column. The appropriate IREP model would be selected and run based on the type of skin cancer (basal cell or squamous cell) that is listed in the claim's NIOSH Referral Summary Document.

For multiple IREP models that are connected by the word "AND", separate IREP runs should be made for each listed model, and compensability is determined based on the model that results in the highest POC, which is favorable to the claimant. For example, ICD-9 code 233.3 is listed as "Female genitalia

less ovary AND Ovary” in the IREP Model column. Separate IREP runs should be made using each model, and compensability would be based on the model that results in the highest POC.

4.7 SKIN CANCER MODEL CLARIFICATION

If the IREP Model column lists squamous cell AND basal cell carcinomas, and the skin cancer is named but not clearly as squamous or basal, the non-melanoma squamous cell model is to be used. This model was developed with all named, non-melanoma, non-basal cell carcinoma included.

For example, for ICD-9 code 173, if the named cancer is fibrosarcoma of skin, this is not clearly either squamous cell or basal cell carcinoma. It is a specific, named cancer, however, so the non-melanoma squamous cell model should be used (rather than using both models and selecting the higher POC).

The only exceptions to this rule are the named cancers basalsquamous cell carcinoma and squamobasal cell carcinoma. Because these are transitional forms, both IREP models should be run and the one that yields the larger POC should be selected.

4.8 ADENOCARCINOMA OF THE DISTAL (LOWER THIRD) ESOPHAGUS

If adenocarcinoma is indicated in the distal esophagus (also known as the lower third, abdominal, lower thoracic esophagus, gastroesophageal, cardioesophageal junction, or esophageal cardia), the appropriate IMBA, external, and IREP organ model is the stomach. To use the stomach model, both conditions must be met (adenocarcinoma AND correct location). If either condition is not met, the use of the esophagus for the IMBA, external, and IREP organ model is appropriate.

4.9 SECONDARY CANCERS – LIKELY PRIMARY CANCER SITES WITH MULTIPLE IMBA, EXTERNAL, AND IREP ORGAN MODEL OPTIONS

For secondary cancers with unknown primary cancer sites, the likely primary cancer sites are listed in Table 3-2. Because the likely primary cancer sites are listed only by ICD-9 code (three-digit code with no extensions), it is possible for a single likely primary cancer site to have multiple options for IMBA, external, and IREP organ model selection. In this case, each possible option must be assessed, and the option that yields the largest POC should be submitted.

For example, secondary cancer code 196.2 has a likely primary cancer site of ICD-9 code 153. ICD-9 code 153 has an Internal Dosimetry Organ selection of upper large intestine (ULI), lower large intestine (LLI), and colon, depending on the extension of the ICD-9 code. Because it is an unknown location, each of these organs must be run for internal dose purposes, and the one yielding the largest dose over the exposure period should be selected for use in the IREP run.

4.10 MULTIPLE SECONDARY CANCERS WITH UNKNOWN PRIMARY CANCER SITE OR MULTIPLE PRIMARY AND SECONDARY CANCERS

In some claims, multiple secondary cancers with unknown primary cancer locations might be indicated. In such cases, unless DOL specifically states differently, each likely primary cancer site from each secondary cancer is to be treated separately, with individual IREP POC determinations, and combined as separate primary cancers.

For example, consider a claim has indicated separate secondary cancers of 196.0 (Lymph nodes of head, face, and neck) and 197.7 (Liver, specified as secondary), with no indication of the cancers being metastasized from a single unknown primary cancer site. When each of the likely primary cancer sites is assessed, ICD-9 code 162 (Lung) yields the largest POC for each at 38% (for this

example only). Because it is possible that each secondary cancer came from a separate likely primary lung cancer, the POC results for each likely primary lung cancer should be combined to yield a final POC of 61.56% (per multiple cancer calculation in IREP).

The same type of situation might occur when primary and secondary cancers are both indicated by DOL. The same logic applies that, unless specifically directed otherwise by DOL, each cancer should be treated as a separate cancer for the determination of POC and for combining them for the final POC. It should not be assumed by the dose reconstructor that any listed secondary cancer has metastasized from another listed primary cancer.

Table 3-1. Selection of organs, tissues, and IREP models for internal and external dose reconstruction based on ICD-9 code.

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
140	Malig neoplasm lip			
140.0	Malig neo upper vermillion	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.1	Malig neo lower vermillion	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.3	Malig neo upper lip, inner	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.4	Malig neo lower lip, inner	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.5	Malig neo lip, inner nos	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.6	Malig neo lip, commissure	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.8	Malig neo lip nec	Highest non-met org/tiss	Skin	Oral cav and pharynx
140.9	Malig neo lip/vermil nos	Highest non-met org/tiss	Skin	Oral cav and pharynx
141	Malig neo tongue			
141.0	Malig neo tongue base	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.1	Malig neo dorsal tongue	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.2	Malig neo tip/lat tongue	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.3	Malig neo ventral tongue	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.4	Malig neo ant 2/3 tongue	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.5	Malig neo tongue junction	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.6	Malig neo lingual tonsil	LNETH	Thyroid/remainder ^a	Oral cav and pharynx
141.8	Malig neo tongue nec	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
141.9	Malig neo tongue nos	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
142	Malig neo major salivary			
142.0	Malig neo parotid	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
142.1	Malig neo submandibular	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
142.2	Malig neo sublingual	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
142.8	Malig neo maj salivary nec	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
142.9	Malig neo salivary nos	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
143	Malignant neoplasm gum			
143.0	Malig neo upper gum	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
143.1	Malig neo lower gum	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
143.8	Malig neo gum nec	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
143.9	Malig neo gum nos	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
144	Malig neo mouth floor			
144.0	Malig neo ant floor mouth	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
144.1	Malig neo lat floor mouth	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
144.8	Malig neo mouth floor nec	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
144.9	Malig neo mouth floor nos	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145	Malig neo mouth nec/nos			
145.0	Malig neo cheek mucosa	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.1	Malig neo mouth vestibule	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
145.2	Malig neo hard palate	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.3	Malig neo soft palate	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.4	Malig neo uvula	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.5	Malig neo palate nos	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.6	Malig neo retromolar	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.8	Malig neo mouth nec	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
145.9	Malig neo mouth nos	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav and pharynx
146	Malig neo oropharynx			
146.0	Malig neo tonsil	LNET	Esophagus	Oral cav and pharynx
146.1	Malig neo tonsillar fossa	LNET	Esophagus	Oral cav and pharynx
146.2	Malig neo tonsil pillars	LNET	Esophagus	Oral cav and pharynx
146.3	Malig neo vallecula	ET2	Esophagus	Oral cav and pharynx
146.4	Malig neo ant epiglottis	ET2	Esophagus	Oral cav and pharynx
146.5	Malig neo epiglottis junct	ET2	Esophagus	Oral cav and pharynx
146.6	Malig neo lat oropharynx	ET2	Esophagus	Oral cav and pharynx
146.7	Malig neo post oropharynx	ET2	Esophagus	Oral cav and pharynx
146.8	Malig neo oropharynx nec	ET2	Esophagus	Oral cav and pharynx
146.9	Malig neo oropharynx nos	ET2	Esophagus	Oral cav and pharynx
147	Malig neo nasopharynx			
147.0	Malig neo super nasopharynx	ET2	Esophagus	Oral cav and pharynx
147.1	Malig neo post nasopharynx	ET2	Esophagus	Oral cav and pharynx
147.2	Malig neo lat nasopharynx	ET2	Esophagus	Oral cav and pharynx
147.3	Malig neo ant nasopharynx	ET2	Esophagus	Oral cav and pharynx
147.8	Malig neo nasopharynx nec	ET2	Esophagus	Oral cav and pharynx
147.9	Malig neo nasopharynx nos	ET2	Esophagus	Oral cav and pharynx
148	Malig neo hypopharynx			
148.0	Malig neo postcricoid	ET2	Esophagus	Oral cav and pharynx
148.1	Malig neo pyriform sinus	ET2	Esophagus	Oral cav and pharynx
148.2	Malig neo aryepiglott fold	ET2	Esophagus	Oral cav and pharynx
148.3	Malig neo post hypopharynx	ET2	Esophagus	Oral cav and pharynx
148.8	Malig neo hypopharynx nec	ET2	Esophagus	Oral cav and pharynx
148.9	Malig neo hypopharynx nos	ET2	Esophagus	Oral cav and pharynx
149	Other malig oropharynx			
149.0	Malig neo pharynx nos	ET2	Esophagus	Oral cav and pharynx
149.1	Malig neo waldeyer's ring	LNET	Esophagus	Oral cav and pharynx
149.8	Malig neo oral/pharynx nec	ET2	Esophagus	Oral cav and pharynx
149.9	Malig neo orophryn ill-def	ET2	Esophagus	Oral cav and pharynx
150	Malig neo esophagus			
150.0	Malig neo cervical esophag	Esophagus	Esophagus	Esophagus

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
150.1	Malig neo thoracic esophag	Esophagus/stomach†	Esophagus/stomach†	Esophagus/stomach†
150.2	Malig neo abdomin esophag	Esophagus/stomach†	Esophagus/stomach†	Esophagus/stomach†
150.3	Malig neo upper 3rd esoph	Esophagus	Esophagus	Esophagus
150.4	Malig neo middle 3rd esoph	Esophagus	Esophagus	Esophagus
150.5	Malig neo lower 3rd esoph	Esophagus/stomach†	Esophagus/stomach†	Esophagus/stomach†
150.8	Malig neo esophagus nec	Esophagus/stomach†	Esophagus/stomach†	Esophagus/stomach†
150.9	Malig neo esophagus nos	Esophagus/stomach†	Esophagus/stomach†	Esophagus/stomach†
151	Malignant neo stomach			
151.0	Malig neo stomach cardia	Stomach	Stomach	Stomach
151.1	Malig neo pylorus	Stomach	Stomach	Stomach
151.2	Malig neo pyloric antrum	Stomach	Stomach	Stomach
151.3	Malig neo stomach fundus	Stomach	Stomach	Stomach
151.4	Malig neo stomach body	Stomach	Stomach	Stomach
151.5	Malig neo stom lesser curv	Stomach	Stomach	Stomach
151.6	Malig neo stom great curv	Stomach	Stomach	Stomach
151.8	Malig neo stomach nec	Stomach	Stomach	Stomach
151.9	Malig neo stomach nos	Stomach	Stomach	Stomach
152	Malig neo small bowel			
152.0	Malig neo duodenum	SI	Stomach	All digestive
152.1	Malig neo jejunum	SI	Stomach	All digestive
152.2	Malig neo ileum	SI	Stomach	All digestive
152.3	Malig neo meckel's divert	SI	Stomach	All digestive
152.8	Malig neo small bowel nec	SI	Stomach	All digestive
152.9	Malig neo small bowel nos	SI	Stomach	All digestive
153	Malignant neoplasm colon			
153.0	Malig neo hepatic flexure	ULI	Colon	Colon
153.1	Malig neo transverse colon	ULI	Colon	Colon
153.2	Malig neo descend colon	LLI	Colon	Colon
153.3	Malig neo sigmoid colon	LLI	Colon	Colon
153.4	Malig neo cecum	ULI	Colon	Colon
153.5	Malig neo appendix	ULI	Colon	Colon
153.6	Malig neo ascend colon	ULI	Colon	Colon
153.7	Malig neo splenic flexure	LLI	Colon	Colon
153.8	Malig neo colon nec	Colon	Colon	Colon
153.9	Malig neo colon nos	Colon	Colon	Colon
154	Malig neo rectum/anus			
154.0	Malig neo rectosigmoid jct	LLI	Colon	Rectum
154.1	Malig neo rectum	LLI	Colon	Rectum
154.2	Malig neo anal canal	LLI	Colon	Rectum

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
154.3	Malig neo anus nos	LLI	Colon	Rectum
154.8	Malig neo rectum/anus nec	LLI	Colon	Rectum
155	Malignant neoplasm liver			
155.0	Malig neo liver, primary	Liver	Liver	Liver
155.1	Malig neo intrahepat ducts	Liver/gallbladder ^h	Liver	Gallbladder
155.2	Malig neo liver nos	Liver	Liver	Liver
156	Malig neo gb/extrahepatic			
156.0	Malig neo gallbladder	Gallbladder	Liver	Gallbladder
156.1	Malig neo extrahepat ducts	Gallbladder	Liver	Gallbladder
156.2	Malig neo ampulla vater	Gallbladder	Liver	Gallbladder
156.8	Malig neo biliary nec	Gallbladder	Liver	Gallbladder
156.9	Malig neo biliary nos	Gallbladder	Liver	Gallbladder
157	Malignant neo pancreas			
157.0	Malig neo pancreas head	Pancreas	Stomach	Pancreas
157.1	Malig neo pancreas body	Pancreas	Stomach	Pancreas
157.2	Malig neo pancreas tail	Pancreas	Stomach	Pancreas
157.3	Malig neo pancreatic duct	Pancreas	Stomach	Pancreas
157.4	Malig neo islet langerhans	Pancreas	Stomach	Pancreas
157.8	Malig neo pancreas nec	Pancreas	Stomach	Pancreas
157.9	Malig neo pancreas nos	Pancreas	Stomach	Pancreas
158	Malig neo peritoneum			
158.0	Malig neo retroperitoneum	Highest non-met org/tiss	Stomach	All digestive
158.8	Malig neo peritoneum nec	Highest non-met org/tiss	Stomach	All digestive
158.9	Malig neo peritoneum nos	Highest non-met org/tiss	Stomach	All digestive
159	Other malig neo gi/periton			
159.0	Malig neo intestine nos	Colon	Stomach	All digestive
159.1	Malig neo spleen nec	Spleen	Stomach	All digestive
159.8	Malig neo gi/intra-abd nec	Highest non-met org/tiss	Stomach	All digestive
159.9	Malig neo gi tract ill-def	Highest non-met org/tiss	Stomach	All digestive
160	Malig neo nasal cav/sinus			
160.0	Malig neo nasal cavities	ET1	Thyroid/remainder ^a	Other respiratory
160.1	Malig neo middle ear	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
160.2	Malig neo maxillary sinus	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
160.3	Malig neo ethmoidal sinus	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
160.4	Malig neo frontal sinus	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
160.5	Malig neo sphenoid sinus	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
160.8	Malig neo access sinus nec	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
160.9	Malig neo access sinus nos	Highest non-met org/tiss	Thyroid/remainder ^a	Other respiratory
161	Malignant neo larynx			

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
161.0	Malig neo glottis	ET2	Esophagus	Other respiratory
161.1	Malig neo supraglottis	ET2	Esophagus	Other respiratory
161.2	Malig neo subglottis	ET2	Esophagus	Other respiratory
161.3	Malig neo cartilage larynx	ET2	Esophagus	Other respiratory
161.8	Malig neo larynx nec	ET2	Esophagus	Other respiratory
161.9	Malig neo larynx nos	ET2	Esophagus	Other respiratory
162	Malig neo trachea/lung			
162.0	Malig neo trachea	Lung	Lung	Lung
162.2	Malig neo main bronchus	Lung	Lung	Lung
162.3	Malig neo upper lobe lung	Lung	Lung	Lung
162.4	Malig neo middle lobe lung	Lung	Lung	Lung
162.5	Malig neo lower lobe lung	Lung	Lung	Lung
162.8	Malig neo bronch/lung nec	Lung	Lung	Lung
162.9	Malig neo bronch/lung nos	Lung	Lung	Lung
163	Malignant neopl pleura			
163.0	Malig neo parietal pleura	Highest non-met org/tiss	Lung	Other respiratory
163.1	Malig neo visceral pleura	Highest non-met org/tiss	Lung	Other respiratory
163.8	Malig neo pleura nec	Highest non-met org/tiss	Lung	Other respiratory
163.9	Malig neo pleura nos	Highest non-met org/tiss	Lung	Other respiratory
164	Malig neo thymus/mediastin			
164.0	Malig neo thymus	Thymus	Thymus	Other respiratory
164.1	Malig neo heart	Heart Wall	Thymus	Other respiratory
164.2	Malig neo ant mediastinum	Highest non-met org/tiss	Thymus	Other respiratory
164.3	Malig neo post mediastinum	Highest non-met org/tiss	Thymus	Other respiratory
164.8	Malig neo mediastinum nec	Highest non-met org/tiss	Thymus	Other respiratory
164.9	Malig neo mediastinum nos	Highest non-met org/tiss	Thymus	Other respiratory
165	Oth/ill-def mal neo resp			
165.0	Malig neo upper resp nos	Lung	Lung	Other respiratory
165.8	Malig neo thorax/resp nec	Lung	Lung	Other respiratory
165.9	Malig neo resp system nos	Lung	Lung	Other respiratory
170	Malig neo bone/artic cart			
170.0	Malig neo skull/face bone	Bone surface	Bone surface	Bone
170.1	Malig neo mandible	Bone surface	Bone surface	Bone
170.2	Malig neo vertebrae	Bone surface	Bone surface	Bone
170.3	Malig neo ribs/stern/clav	Medical review	Bone surface	Bone
170.4	Malig neo long bones arm	Bone surface	Bone surface	Bone
170.5	Malig neo bones wrist/hand	Bone surface	Bone surface	Bone
170.6	Malig neo pelvic girdle	Medical review	Bone surface	Bone
170.7	Malig neo long bones leg	Medical review	Bone surface	Bone

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
170.8	Malig neo bones ankle/foot	Bone surface	Bone surface	Bone
170.9	Malig neo bone nos	Medical review	Bone surface	Bone
171	Malig neo soft tissue			
171.0	Malig neo soft tissue head	Highest non-met org/tiss	Thyroid/remainder ^a	Connective tissue
171.2	Malig neo soft tissue arm	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.3	Malig neo soft tissue leg	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.4	Malig neo soft tis thorax	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.5	Malig neo soft tis abdomen	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.6	Malig neo soft tis pelvis	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.7	Malig neo trunk nos	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.8	Malig neo soft tissue nec	Highest non-met org/tiss	Remainder ^b	Connective tissue
171.9	Malig neo soft tissue nos	Highest non-met org/tiss	Remainder ^b	Connective tissue
172	Malignant melanoma skin			
172.0	Malig melanoma lip	Skin	Skin	Malignant melanoma
172.1	Malig melanoma eyelid	Skin	Skin	Malignant melanoma
172.2	Malig melanoma ear	Skin	Skin	Malignant melanoma
172.3	Malig melanoma face nec/nos	Skin	Skin	Malignant melanoma
172.4	Malig melanoma scalp/neck	Skin	Skin	Malignant melanoma
172.5	Malig melanoma trunk	Skin	Skin	Malignant melanoma
172.6	Malig melanoma arm	Skin	Skin	Malignant melanoma
172.7	Malig melanoma leg	Skin	Skin	Malignant melanoma
172.8	Malig melanoma skin nec	Skin	Skin	Malignant melanoma
172.9	Malig melanoma skin nos	Skin	Skin	Malignant melanoma
173	Other malig neopl skin			
173.0	Malig neo skin lip	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.1	Malig neo skin eyelid	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.2	Malig neo skin ear	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.3	Malig neo skin face nec	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.4	Malig neo scalp/skin neck	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.5	Malig neo skin trunk	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.6	Malig neo skin arm	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.7	Malig neo skin leg	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
173.8	Malig neo skin nec	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
173.9	Malig neo skin nos	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
174	Malig neo female breast			
174.0	Malig neo nipple	Breast	Breast	Breast
174.1	Malig neo breast-central	Breast	Breast	Breast
174.2	Malig neo breast up-inner	Breast	Breast	Breast
174.3	Malig neo breast low-inner	Breast	Breast	Breast
174.4	Malig neo breast up-outer	Breast	Breast	Breast
174.5	Malig neo breast low-outer	Breast	Breast	Breast
174.6	Malig neo breast-axillary	Breast	Breast	Breast
174.8	Malig neo breast nec	Breast	Breast	Breast
174.9	Malig neo breast nos	Breast	Breast	Breast
175	Malig neo male breast			
175.0	Malig neo male nipple	Breast	Breast	Breast
175.9	Malig neo male breast nec	Breast	Breast	Breast
176	Kaposi's sarcoma			
176.0	Skin-kaposi's sarcoma	Skin	Skin	Connective tissue AND non-melanoma skin-squamous cell
176.1	Soft tissue-kaposi's sarcoma	Highest non-met org/tiss	Remainder ^b	Connective tissue AND non-melanoma skin-squamous cell
176.2	Palate-kaposi's sarcoma	Highest non-met org/tiss	Thyroid/remainder ^a	Connective tissue AND non-melanoma skin-squamous cell
176.3	Gi sites-kaposi's sarcoma	Colon	Stomach/colon (location dependant)	Connective tissue AND non-melanoma skin-squamous cell
176.4	Lung-kaposi's sarcoma	Lung	Lung	Connective tissue AND non-melanoma skin-squamous cell
176.5	Lymph nodes-kaposi's sarcoma	Highest non-met org/tiss	Remainder ^b	Connective tissue AND non-melanoma skin-squamous cell
176.8	Spf sts-kaposi's sarcoma	Highest non-met org/tiss	Remainder ^b	Connective tissue AND non-melanoma skin-squamous cell
176.9	Kaposi's sarcoma nos	Highest non-met org/tiss	Remainder ^b	Connective tissue AND non-melanoma skin-squamous cell
179	Malig neo uterus nos	Uterus	Uterus	Female genitalia less ovary
180	Malig neo cervix uteri			
180.0	Malig neo endocervix	Uterus	Uterus	Female genitalia less ovary
180.1	Malig neo exocervix	Uterus	Uterus	Female genitalia less ovary
180.8	Malig neo cervix nec	Uterus	Uterus	Female genitalia less ovary

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
180.9	Malig neo cervix uteri nos	Uterus	Uterus	Female genitalia less ovary
181	Malig neo placenta	Uterus	Uterus	Female genitalia less ovary
182	Malig neo uterus body			
182.0	Malig neo corpus uteri	Uterus	Uterus	Female genitalia less ovary
182.1	Malig neo uterine isthmus	Uterus	Uterus	Female genitalia less ovary
182.8	Malig neo body uterus nec	Uterus	Uterus	Female genitalia less ovary
183	Malig neo uterine adnexa			
183.0	Malig neo ovary	Ovaries	Ovaries	Ovary
183.2	Malig neo fallopian tube	Ovaries	Ovaries	Ovary
183.3	Malig neo broad ligament	Ovaries	Ovaries	Ovary
183.4	Malig neo parametrium	Uterus	Ovaries	Ovary
183.5	Malig neo round ligament	Uterus	Ovaries	Ovary
183.8	Malig neo adnexa nec	Ovaries	Ovaries	Ovary
183.9	Malig neo adnexa nos	Ovaries	Ovaries	Ovary
184	Malig neo fem gen nec/nos			
184.0	Malig neo vagina	Muscle	Uterus	Female genitalia less ovary
184.1	Malig neo labia majora	Skin	Uterus	Female genitalia less ovary
184.2	Malig neo labia minora	Skin	Uterus	Female genitalia less ovary
184.3	Malig neo clitoris	Skin	Uterus	Female genitalia less ovary
184.4	Malig neo vulva nos	Skin	Uterus	Female genitalia less ovary
184.8	Malig neo female genit nec	Uterus	Uterus	Female genitalia less ovary
184.9	Malig neo female genit nos	Uterus	Uterus	Female genitalia less ovary
185	Malig neo prostate	Highest non-met org/tiss	Bladder	All male genitalia
186	Malig neo testis			
186.0	Malig neo undescend testis	Testes	Testes	All male genitalia
186.9	Malig neo testis nec	Testes	Testes	All male genitalia
187	Malig neo male genital nec			
187.1	Malig neo prepuce	Skin	Testes	All male genitalia
187.2	Malig neo glans penis	Skin	Testes	All male genitalia
187.3	Malig neo penis body	Testes	Testes	All male genitalia
187.4	Malig neo penis nos	Testes	Testes	All male genitalia
187.5	Malig neo epididymis	Testes	Testes	All male genitalia
187.6	Malig neo spermatic cord	Testes	Testes	All male genitalia
187.7	Malig neo scrotum	Testes	Testes	All male genitalia
187.8	Malig neo male genital nec	Testes	Testes	All male genitalia
187.9	Malig neo male genital nos	Testes	Testes	All male genitalia
188	Malig neo bladder			
188.0	Malig neo bladder-trigone	Bladder	Bladder	Bladder
188.1	Malig neo bladder-dome	Bladder	Bladder	Bladder

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
188.2	Malig neo bladder-lateral	Bladder	Bladder	Bladder
188.3	Malig neo bladder-anterior	Bladder	Bladder	Bladder
188.4	Malig neo bladder-post	Bladder	Bladder	Bladder
188.5	Malig neo bladder neck	Bladder	Bladder	Bladder
188.6	Malig neo ureteric orifice	Bladder	Bladder	Bladder
188.7	Malig neo urachus	Bladder	Bladder	Bladder
188.8	Malig neo bladder nec	Bladder	Bladder	Bladder
188.9	Malig neo bladder nos	Bladder	Bladder	Bladder
189	Malig neo urinary nec/nos			
189.0	Malig neo kidney	Kidney	Liver	Urinary organs less bladder
189.1	Malig neo renal pelvis	Kidney	Liver	Urinary organs less bladder
189.2	Malig neo ureter	Highest non-met org/tiss	Liver	Urinary organs less bladder
189.3	Malig neo urethra	Highest non-met org/tiss	Liver	Urinary organs less bladder
189.4	Malig neo paraurethral	Highest non-met org/tiss	Liver	Urinary organs less bladder
189.8	Malig neo urinary nec	Bladder	Liver	Urinary organs less bladder
189.9	Malig neo urinary nos	Medical review	Liver	Urinary organs less bladder
190	Malig neoplasm eye			
190.0	Malig neo eyeball	Brain	Eye lens	Eye
190.1	Malig neo orbit	Brain	Eye lens	Eye
190.2	Malig neo lacrimal gland	Skin	Eye lens	Eye
190.3	Malig neo conjunctiva	Skin	Eye lens	Eye
190.4	Malig neo cornea	Skin	Eye lens	Eye
190.5	Malig neo retina	Brain	Eye lens	Eye
190.6	Malig neo choroid	Brain	Eye lens	Eye
190.7	Malig neo lacrimal duct	Skin	Eye lens	Eye
190.8	Malig neo eye nec	Skin	Eye lens	Eye
190.9	Malig neo eye nos	Skin	Eye lens	Eye
191	Malig neoplasm brain			
191.0	Malig neo cerebrum	Brain	Thyroid/remainder ^a	Nervous system
191.1	Malig neo frontal lobe	Brain	Thyroid/remainder ^a	Nervous system
191.2	Malig neo temporal lobe	Brain	Thyroid/remainder ^a	Nervous system
191.3	Malig neo parietal lobe	Brain	Thyroid/remainder ^a	Nervous system
191.4	Malig neo occipital lobe	Brain	Thyroid/remainder ^a	Nervous system
191.5	Malig neo cereb ventricle	Brain	Thyroid/remainder ^a	Nervous system
191.6	Malig neo cerebellum nos	Brain	Thyroid/remainder ^a	Nervous system
191.7	Malig neo brain stem	Brain	Thyroid/remainder ^a	Nervous system
191.8	Malig neo brain nec	Brain	Thyroid/remainder ^a	Nervous system
191.9	Malig neo brain nos	Brain	Thyroid/remainder ^a	Nervous system
192	Malig neo nerve nec/nos			

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
192.0	Malig neo cranial nerves	Brain	Thyroid/remainder ^a	Nervous system
192.1	Malig neo cerebral mening	Brain	Thyroid/remainder ^a	Nervous system
192.2	Malig neo spinal cord	Brain	Thyroid/remainder ^a	Nervous system
192.3	Malig neo spinal meninges	Brain	Thyroid/remainder ^a	Nervous system
192.8	Malig neo nervous syst nec	Brain	Thyroid/remainder ^a	Nervous system
192.9	Malig neo nervous syst nos	Brain	Thyroid/remainder ^a	Nervous system
193	Malig neo thyroid	Thyroid	Thyroid	Thyroid
194	Malig neo other endocrine			
194.0	Malig neo adrenal	Adrenals	Thyroid/remainder ^a	Other endocrine glands
194.1	Malig neo parathyroid	Thyroid	Thyroid	Other endocrine glands
194.3	Malig neo pituitary	Brain	Thyroid/remainder ^a	Other endocrine glands
194.4	Malig neo pineal gland	Brain	Thyroid/remainder ^a	Other endocrine glands
194.5	Malig neo carotid body	Brain	Thyroid	Other endocrine glands
194.6	Malig neo paraganglia nec	Brain	Thyroid/remainder ^a	Other endocrine glands
194.8	Malig neo endocrine nec	Medical review	Remainder ^b	Other endocrine glands
194.9	Malig neo endocrine nos	Medical review	Remainder ^b	Other endocrine glands
195	Malig neo oth/ill-def site			
195.0	Malig neo head/face/neck	Highest non-met org/tiss	Thyroid/remainder ^a	Other and ill-defined sites
195.1	Malig neo thorax	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
195.2	Malig neo abdomen	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
195.3	Malig neo pelvis	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
195.4	Malig neo arm	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
195.5	Malig neo leg	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
195.8	Malig neo site nec	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
196	Malig neo lymph nodes			
196.0	Malig neo lymph-head/neck	NA ^c	NA ^c	NA ^c
196.1	Malig neo lymph-intrathor	NA ^c	NA ^c	NA ^c
196.2	Malig neo lymph-intra-abd	NA ^c	NA ^c	NA ^c
196.3	Malig neo lymph-axilla/arm	NA ^c	NA ^c	NA ^c
196.5	Malig neo lymph-inguin/leg	NA ^c	NA ^c	NA ^c
196.6	Malig neo lymph-intrapelv	NA ^c	NA ^c	NA ^c
196.8	Malig neo lymph-mult	NA ^c	NA ^c	NA ^c
196.9	Malig neo lymph nos	NA ^c	NA ^c	NA ^c
197	Sec malig neo gi/resp			
197.0	Sec malig neo lung	NA ^c	NA ^c	NA ^c
197.1	Sec malig neo mediastinum	NA ^c	NA ^c	NA ^c
197.2	Sec malig neo pleura	NA ^c	NA ^c	NA ^c
197.3	Sec malig neo resp nec	NA ^c	NA ^c	NA ^c
197.4	Sec malig neo sm bowel	NA ^c	NA ^c	NA ^c

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
197.5	Sec malig neo lg bowel	NA ^c	NA ^c	NA ^c
197.6	Sec malig neo peritoneum	NA ^c	NA ^c	NA ^c
197.7	Sec malig neo liver	NA ^c	NA ^c	NA ^c
197.8	Sec malig neo gi nec	NA ^c	NA ^c	NA ^c
198	Sec malig neo other sites			
198.0	Sec malig neo kidney	NA ^c	NA ^c	NA ^c
198.1	Sec malig neo urin nec	NA ^c	NA ^c	NA ^c
198.2	Sec malig neo skin	NA ^c	NA ^c	NA ^c
198.3	Sec malig neo brain/spine	NA ^c	NA ^c	NA ^c
198.4	Sec malig neo nerve nec	NA ^c	NA ^c	NA ^c
198.5	Sec malig neo bone	NA ^c	NA ^c	NA ^c
198.6	Sec malig neo ovary	NA ^c	NA ^c	NA ^c
198.7	Sec malig neo adrenal	NA ^c	NA ^c	NA ^c
198.8	Other secondary malig neo			
198.81	Sec malig neo breast	NA ^c	NA ^c	NA ^c
198.82	Sec malig neo genital	NA ^c	NA ^c	NA ^c
198.89	Sec malig neo nec	NA ^c	NA ^c	NA ^c
199	Malig neoplasm nos			
199.0	Malig neo disseminated	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
199.1	Malig neo nos	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
200	Lymphosarc/reticulosarc	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.0	Reticulosarcoma	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.00	Retclsrc unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.01	Reticulosarcoma head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
200.02	Reticulosarcoma thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
200.03	Reticulosarcoma abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
200.04	Reticulosarcoma axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
200.05	Reticulosarcoma inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.06	Reticulosarcoma pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.07	Reticulosarcoma spleen	Spleen	Stomach	Lymphoma and multiple myeloma
200.08	Reticulosarcoma mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.1	Lymphosarcoma	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.10	Lymphsrc unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.11	Lymphosarcoma head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
200.12	Lymphosarcoma thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
200.13	Lymphosarcoma abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
200.14	Lymphosarcoma axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
200.15	Lymphosarcoma inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.16	Lymphosarcoma pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
200.17	Lymphosarcoma spleen	Spleen	Stomach	Lymphoma and multiple myeloma
200.18	Lymphosarcoma mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.2	Burkitt's tumor/lymphoma	LN(TH)	Lung	Lymphoma and multiple myeloma
200.20	Burkitt's tumor unspec ext org	LN(TH)	Lung	Lymphoma and multiple myeloma
200.21	Burkitt's tumor head	LN(TH)	Lung	Lymphoma and multiple myeloma
200.22	Burkitt's tumor thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
200.23	Burkitt's tumor abdom	LN(TH)	Lung	Lymphoma and multiple myeloma
200.24	Burkitt's tumor axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
200.25	Burkitt's tumor inguin	LN(TH)	Lung	Lymphoma and multiple myeloma
200.26	Burkitt's tumor pelvic	LN(TH)	Lung	Lymphoma and multiple myeloma
200.27	Burkitt's tumor spleen	LN(TH)	Lung	Lymphoma and multiple myeloma
200.28	Burkitt's tumor mult	LN(TH)	Lung	Lymphoma and multiple myeloma
200.30	Marg zone lymphomas unspec	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.31	Marg zone lymphomas head	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.32	Marg zone lymphomas thorax	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.33	Marg zone lymphomas abdom	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.34	Marg zone lymphomas axilla	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.35	Marg zone lymphomas inguin	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.36	Marg zone lymphomas pelvic	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.37	Marg zone lymphomas spleen	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.38	Marg zone lymphomas mult	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.40	Mantle cell lymphomas unspec	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.41	Mantle cell lymphomas head	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.42	Mantle cell lymphomas thorax	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.43	Mantle cell lymphomas abdom	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.44	Mantle cell lymphomas axilla	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.45	Mantle cell lymphomas inguin	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.46	Mantle cell lymphomas pelvic	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.47	Mantle cell lymphomas spleen	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.48	Mantle cell lymphomas mult	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.50	Primary cns lymphomas unspec	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.51	Primary cns lymphomas head	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.52	Primary cns lymphomas thorax	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.53	Primary cns lymphomas abdom	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.54	Primary cns lymphomas axilla	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.55	Primary cns lymphomas inguin	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.56	Primary cns lymphomas pelvic	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.57	Primary cns lymphomas spleen	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
200.58	Primary cns lymphomas mult	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
200.60	Anaplas lg cell lymphomas unspec	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.61	Anaplas lg cell lymphomas head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
200.62	Anaplas lg cell lymphomas thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
200.63	Anaplas lg cell lymphomas abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
200.64	Anaplas lg cell lymphomas axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
200.65	Anaplas lg cell lymphomas inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.66	Anaplas lg cell lymphomas pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.67	Anaplas lg cell lymphomas spleen	Spleen	Stomach	Lymphoma and multiple myeloma
200.68	Anaplas lg cell lymphomas mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.70	Lg cell lymphomas unspec	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.71	Lg cell lymphomas head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
200.72	Lg cell lymphomas thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
200.73	Lg cell lymphomas abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
200.74	Lg cell lymphomas axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
200.75	Lg cell lymphomas inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.76	Lg cell lymphomas pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.77	Lg cell lymphomas spleen	Spleen	Stomach	Lymphoma and multiple myeloma
200.78	Lg cell lymphomas mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.8	Mixed lymphosarcoma	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.80	Other varn unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
200.81	Mixed lymphosarc head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
200.82	Mixed lymphosarc thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
200.83	Mixed lymphosarc abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
200.84	Mixed lymphosarc axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
200.85	Mixed lymphosarc inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.86	Mixed lymphosarc pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
200.87	Mixed lymphosarc spleen	Spleen	Stomach	Lymphoma and multiple myeloma
200.88	Mixed lymphosarc mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201	Hodgkin's disease	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.0	Hodgkin's paragranuloma	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.00	Hodgkins paragranuloma unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.01	Hodgkins paragran head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.02	Hodgkins paragran thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.03	Hodgkins paragran abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.04	Hodgkins paragran axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.05	Hodgkins paragran inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.06	Hodgkins paragran pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.07	Hodgkins paragran spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.08	Hodgkins paragran mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
201.1	Hodgkin's granuloma	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.10	Hodgkins granulom unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.11	Hodgkins granulom head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.12	Hodgkins granulom thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.13	Hodgkins granulom abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.14	Hodgkins granulom axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.15	Hodgkins granulom inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.16	Hodgkins granulom pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.17	Hodgkins granulom spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.18	Hodgkins granulom mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.2	Hodgkin's sarcoma	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.20	Hodgkins src unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.21	Hodgkins sarcoma head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.22	Hodgkins sarcoma thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.23	Hodgkins sarcoma abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.24	Hodgkins sarcoma axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.25	Hodgkins sarcoma inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.26	Hodgkins sarcoma pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.27	Hodgkins sarcoma spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.28	Hodgkins sarcoma mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.4	Hodgkins lymph-histiocyt	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.40	Lym-hst unspec ext orgn	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.41	Hodgkins lymph-histio head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.42	Hodgkins lymph-histio thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.43	Hodgkins lymph-histio abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.44	Hodgkins lymph-histio axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.45	Hodgkins lymph-histio inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.46	Hodgkins lymph-histio pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.47	Hodgkins lymph-histio spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.48	Hodgkins lymph-histio mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.5	Hodgkins nodular scleros	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.50	Nodular scleros unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.51	Hodgkins nodul sclero head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.52	Hodgkins nodul sclero thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.53	Hodgkins nodul sclero abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.54	Hodgkins nodul sclero axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.55	Hodgkins nodul sclero inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.56	Hodgkins nodul sclero pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.57	Hodgkins nodul sclero spleen	Spleen	Stomach	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
201.58	Hodgkins nodul sclero mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.6	Hodgkins mix cellularity	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.60	Mxd celr unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.61	Hodgkins mix cell head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.62	Hodgkins mix cell thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.63	Hodgkins mix cell abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.64	Hodgkins mix cell axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.65	Hodgkins mix cell inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.66	Hodgkins mix cell pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.67	Hodgkins mix cell spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.68	Hodgkins mix cell mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.7	Hodg lymphocytic deplet	Highest non-met org/tiss	Thyroid	Lymphoma and multiple myeloma
201.70	Lym dplt unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.71	Hodgkins lymph deplet head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.72	Hodgkins lymph deplet thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.73	Hodgkins lymph deplet abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.74	Hodgkins lymph deplet axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.75	Hodgkins lymph deplet inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.76	Hodgkins lymph deplet pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.77	Hodgkins lymph deplet spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.78	Hodgkins lymph deplet mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.9	Hodgkins disease nos	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.90	Hdgk disease unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
201.91	Hodgkins disease nos head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
201.92	Hodgkins disease nos thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
201.93	Hodgkins disease nos abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
201.94	Hodgkins disease nos axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
201.95	Hodgkins disease nos inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.96	Hodgkins disease nos pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
201.97	Hodgkins disease nos spleen	Spleen	Stomach	Lymphoma and multiple myeloma
201.98	Hodgkins disease nos mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202	Other malig neo lymph/histio	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.0	Nodular lymphoma	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.00	Ndlr lym unspec ext org	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.01	Nodular lymphoma head	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.02	Nodular lymphoma thorax	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.03	Nodular lymphoma abdom	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.04	Nodular lymphoma axilla	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.05	Nodular lymphoma inguin	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
202.06	Nodular lymphoma pelvic	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.07	Nodular lymphoma spleen	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.08	Nodular lymphoma mult	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.1	Mycosis fungoides	Skin	Skin	Lymphoma and multiple myeloma
202.10	Myco fng unspec ext org	Skin	Skin	Lymphoma and multiple myeloma
202.11	Mycosis fungoides head	Skin	Skin	Lymphoma and multiple myeloma
202.12	Mycosis fungoides thorax	Skin	Skin	Lymphoma and multiple myeloma
202.13	Mycosis fungoides abdom	Skin	Skin	Lymphoma and multiple myeloma
202.14	Mycosis fungoides axilla	Skin	Skin	Lymphoma and multiple myeloma
202.15	Mycosis fungoides inguin	Skin	Skin	Lymphoma and multiple myeloma
202.16	Mycosis fungoides pelvic	Skin	Skin	Lymphoma and multiple myeloma
202.17	Mycosis fungoides spleen	Skin	Skin	Lymphoma and multiple myeloma
202.18	Mycosis fungoides mult	Skin	Skin	Lymphoma and multiple myeloma
202.2	Sezary's disease	Skin	Skin	Lymphoma and multiple myeloma
202.20	Szry disease unspec ext org	Skin	Skin	Lymphoma and multiple myeloma
202.21	Sezary's disease head	Skin	Skin	Lymphoma and multiple myeloma
202.22	Sezary's disease thorax	Skin	Skin	Lymphoma and multiple myeloma
202.23	Sezary's disease abdom	Skin	Skin	Lymphoma and multiple myeloma
202.24	Sezary's disease axilla	Skin	Skin	Lymphoma and multiple myeloma
202.25	Sezary's disease inguin	Skin	Skin	Lymphoma and multiple myeloma
202.26	Sezary's disease pelvic	Skin	Skin	Lymphoma and multiple myeloma
202.27	Sezary's disease spleen	Skin	Skin	Lymphoma and multiple myeloma
202.28	Sezary's disease mult	Skin	Skin	Lymphoma and multiple myeloma
202.3	Malig histiocytosis	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202.30	Mlg hist unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202.31	Malig histiocytosis head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
202.32	Malig histiocytosis thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
202.33	Malig histiocytosis abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
202.34	Malig histiocytosis axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
202.35	Malig histiocytosis inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
202.36	Malig histiocytosis pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
202.37	Malig histiocytosis spleen	Spleen	Stomach	Lymphoma and multiple myeloma
202.38	Malig histiocytosis mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202.4	Leukem reticuloendothel	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.40	Lk rctcl unspec ext org	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.41	Hairy-cell leukem head	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.42	Hairy-cell leukem thorax	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.43	Hairy-cell leukem abdom	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.44	Hairy-cell leukem axilla	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
202.45	Hairy-cell leukem inguin	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.46	Hairy-cell leukem pelvic	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.47	Hairy-cell leukem spleen	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.48	Hairy-cell leukem mult	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
202.5	Letterer-siwe disease	LN(TH)	Skin	Lymphoma and multiple myeloma
202.50	Ltr-siwe unspec ext org	LN(TH)	Skin	Lymphoma and multiple myeloma
202.51	Letterer-siwe disease head	LN(TH)	Skin	Lymphoma and multiple myeloma
202.52	Letterer-siwe disease thorax	LN(TH)	Skin	Lymphoma and multiple myeloma
202.53	Letterer-siwe disease abdom	LN(TH)	Skin	Lymphoma and multiple myeloma
202.54	Letterer-siwe disease axilla	LN(TH)	Skin	Lymphoma and multiple myeloma
202.55	Letterer-siwe disease inguin	LN(TH)	Skin	Lymphoma and multiple myeloma
202.56	Letterer-siwe disease pelvic	LN(TH)	Skin	Lymphoma and multiple myeloma
202.57	Letterer-siwe disease spleen	LN(TH)	Skin	Lymphoma and multiple myeloma
202.58	Letterer-siwe disease mult	LN(TH)	Skin	Lymphoma and multiple myeloma
202.6	Malig mast cell tumors	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202.60	Malig mast unspec ext org	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202.61	Malig mastocytosis head	LN(ET)	Thyroid	Lymphoma and multiple myeloma
202.62	Malig mastocytosis thorax	LN(TH)	Lung	Lymphoma and multiple myeloma
202.63	Malig mastocytosis abdom	Highest non-met org/tiss	Stomach	Lymphoma and multiple myeloma
202.64	Malig mastocytosis axilla	LN(TH)	Lung	Lymphoma and multiple myeloma
202.65	Malig mastocytosis inguin	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
202.66	Malig mastocytosis pelvic	Highest non-met org/tiss	Bladder	Lymphoma and multiple myeloma
202.67	Malig mastocytosis spleen	Spleen	Stomach	Lymphoma and multiple myeloma
202.68	Malig mastocytosis mult	LN(TH)	Thyroid	Lymphoma and multiple myeloma
202.7	Peripheral t cell (cutaneous) lymphoma unspec ext org	Skin	Skin	Lymphoma and multiple myeloma
202.70	Peripheral t cell (cutaneous) lymphoma unspec ext org	Skin	Skin	Lymphoma and multiple myeloma
202.71	Peripheral t cell (cutaneous) lymphoma head	Skin	Skin	Lymphoma and multiple myeloma
202.72	Peripheral t cell (cutaneous) lymphoma thorax	Skin	Skin	Lymphoma and multiple myeloma
202.73	Peripheral t cell (cutaneous) lymphoma abdom	Skin	Skin	Lymphoma and multiple myeloma
202.74	Peripheral t cell (cutaneous) lymphoma axilla	Skin	Skin	Lymphoma and multiple myeloma
202.75	Peripheral t cell (cutaneous) lymphoma inguin	Skin	Skin	Lymphoma and multiple myeloma
202.76	Peripheral t cell (cutaneous) lymphoma pelvic	Skin	Skin	Lymphoma and multiple myeloma
202.77	Peripheral t cell (cutaneous) lymphoma spleen	Skin	Skin	Lymphoma and multiple myeloma
202.78	Peripheral t cell (cutaneous) lymphoma mult	Skin	Skin	Lymphoma and multiple myeloma
202.8	Lymphomas nec	LN(TH)	Thymus/lung ⁹	Lymphoma and multiple myeloma
202.80	Other lymph unspec ext org	LN(TH)	Thymus/lung ⁹	Lymphoma and multiple myeloma
202.81	Lymphomas nec head	LN(TH)	Thymus/lung ⁹	Lymphoma and multiple myeloma

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
202.82	Lymphomas nec thorax	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.83	Lymphomas nec abdom	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.84	Lymphomas nec axilla	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.85	Lymphomas nec inguin	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.86	Lymphomas nec pelvic	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.87	Lymphomas nec spleen	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.88	Lymphomas nec mult	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.9	Malig neo lym/hist tis nec	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.90	Unspec lym unspec ext org	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.91	Lymphoid malig nec head	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.92	Lymphoid malig nec thorax	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.93	Lymphoid malig nec abdom	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.94	Lymphoid malig nec axilla	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.95	Lymphoid malig nec inguin	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.96	Lymphoid malig nec pelvic	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.97	Lymphoid malig nec spleen	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
202.98	Lymphoid malig nec mult	LN(TH)	Thymus/lung ^g	Lymphoma and multiple myeloma
203	Multiple myeloma et al	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.0	Multiple myeloma	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.00	Mult myelm w/o remission	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.01	Mult myelm w/remission	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.02	Mult myelm in relapse	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.1	Plasma cell leukemia	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.10	Plsm cell leuk w/o remisson	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.11	Plsm cell leuk w/remiss	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.12	Plsm cell leuk in relapse	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.8	Immunoproliferat neoplasm nec	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.80	Other imnprfl npl w/o remiss	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.81	Other imnprfl npl w/remiss	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
203.82	Other imnprfl npl in relapse	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
204	Lymphoid leukemia	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.0	Acute lymphoid leukemia	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.00	Act lym leuk w/o remiss	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.01	Act lym leuk w/remiss	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.02	Act lym leuk in relapse	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.1	Chronic lymphoid leukemia	NA	NA	NA ^d
204.10	Chronic lym leuk w/o remiss	NA	NA	NA ^d
204.11	Chronic lym leuk w/remiss	NA	NA	NA ^d
204.12	Chronic lym leuk in relapse	NA	NA	NA ^d

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREF model
204.2	Subacute lymphoid leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.20	Sbac lym leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.21	Sbac lym leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.22	Sbac lym leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.8	Lymphoid leukemia nec	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.80	Other lym leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.81	Other lym leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.82	Other lym leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
204.9	Lymphoid leukemia nos	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.90	Uns lym leuk w/o remiss	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.91	Uns lym leuk w/remiss	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
204.92	Uns lym leuk in relapse	Red bone marrow	Red bone marrow	Acute lymphoid leukemia
205	Myeloid leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.0	Acute myeloid leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.00	Act myl leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.01	Act myl leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.02	Act myl leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.1	Chronic myeloid leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
205.10	Chronic myl leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
205.11	Chronic myl leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
205.12	Chronic myl leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
205.2	Subacut myeloid leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.20	Sbac myl leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.21	Sbac myl leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.22	Sbac myl leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.3	Myeloid sarcoma	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.30	Myl srcoma w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.31	Myl srcoma w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.32	Myl srcoma in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.8	Myeloid leukemia nec	Red bone marrow	Red bone marrow	Leukemia, less CLL

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREF model
205.80	Other myl leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.81	Other myl leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.82	Other myl leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
205.9	Myeloid leukemia nos	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.90	Uns myl leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.91	Uns myl leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
205.92	Uns myl leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute myeloid leukemia
206	Monocytic leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.0	Acute monocytic leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.00	Act mono leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.01	Act mono leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.02	Act mono leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.1	Chronic monocytic leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.10	Chronic mono leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.11	Chronic mono leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.12	Chronic mono leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.2	Subac monocytic leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.20	Sbacute mono leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.21	Sbacute mono leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.22	Sbacute mono leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.8	Monocytic leukemia nec	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.80	Other mono leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.81	Other mono leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.82	Other mono leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.9	Monocytic leukemia nos	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.90	Uns mono leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.91	Uns mono leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
206.92	Uns mono leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
207	Other specified leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.0	Acute erythremia	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.00	Act erth/erylk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.01	Act erth/erylk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.02	Act erth/erylk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.1	Chronic erythremia	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.10	Chronic erythrm w/o remision	Red bone marrow	Red bone marrow	Leukemia, less CLL

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREF model
207.11	Chronic erythrm w/remission	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.12	Chronic erythrm in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.2	Megakaryocytic leukemia	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.20	Mgkrycyt leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.21	Mgkrycyt leuk w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.22	Mgkrycyt leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.8	Specified leukemia nec	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.80	Other spf leuk w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.81	Other spf leuk w/remision	Red bone marrow	Red bone marrow	Leukemia, less CLL
207.82	Other spf leuk in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
208	Leukemia-unspecif cell	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia
208.0	Act leuk uns cl w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia
208.00	Act leuk uns cl w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia
208.01	Act leuk uns cl w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia
208.02	Act leuk uns cl in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia
208.1	Chronic leukemia nos	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
208.10	Chronic leuk uns cl w/o remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND Chronic myeloid leukemia
208.11	Chronic leuk uns cl w/remiss	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
208.12	Chronic leuk uns cl in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL AND chronic myeloid leukemia
208.2	Subacute leukemia nos	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.20	Subacute leukemia uns cl w/o remission	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.21	Subacute leukemia uns cl w/remission	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.22	Subacute leukemia uns cl in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.8	Leukemia-unspec cell nec	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.80	Other leuk uns cl w/o remission	Red bone marrow	Red bone marrow	Leukemia, less CLL

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
208.81	Other leuk uns cl w/remission	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.82	Other leuk uns cl in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL
208.9	Leukemia-unspec cell nos	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia AND chronic myeloid leukemia
208.90	Other leuk nos w/o remission	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia AND chronic myeloid leukemia
208.91	Other leuk nos w/remission	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia AND chronic myeloid leukemia
208.92	Other leuk nos in relapse	Red bone marrow	Red bone marrow	Leukemia, less CLL AND acute lymphoid leukemia AND acute myeloid leukemia AND chronic myeloid leukemia
209.00	Malig carc tumor si, unspec	SI	Stomach	All digestive
209.01	Malig carc tumor duodenum	SI	Stomach	All digestive
209.02	Malig carc tumor jejunum	SI	Stomach	All digestive
209.03	Malig carc tumor ileum	SI	Stomach	All digestive
209.10	Malig carc tumor li, unspec	Colon	Colon	Colon
209.11	Malig carc tumor appendix	ULI	Colon	Colon
209.12	Malig carc tumor cecum	ULI	Colon	Colon
209.13	Malig carc tumor ascend colon	ULI	Colon	Colon
209.14	Malig carc tumor trans colon	ULI	Colon	Colon
209.15	Malig carc tumor decend colon	LLI	Colon	Colon
209.16	Malig carc tumor sig colon	LLI	Colon	Colon
209.17	Malig carc tumor rectum	LLI	Colon	Rectum
209.20	Malig carc tumor unknown site	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
209.21	Malig carc tumor lung	Lung	Lung	Lung
209.22	Malig carc tumor thymus	Thymus	Thymus	Other respiratory
209.23	Malig carc tumor stomach	Stomach	Stomach	Stomach
209.24	Malig carc tumor kidney	Kidney	Liver	Urinary organs less bladder
209.25	Malig carc tumor foregut, unspec	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
209.26	Malig carc tumor midgut, unspec	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
209.27	Malig carc tumor hindgut, unspec	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
209.29	Malig carc tumor other sites	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
209.30	Malig poor diff neuroend carc, any site	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
209.31	Merkle cell carc face	Skin	Skin	Non-melanoma skin-squamous cell
209.32	Merkle cell carc scalp/neck	Skin	Skin	Non-melanoma skin-squamous cell
209.33	Merkle cell carc upper limb	Skin	Skin	Non-melanoma skin-squamous cell
209.34	Merkle cell carc lower limb	Skin	Skin	Non-melanoma skin-squamous cell
209.35	Merkle cell carc trunk	Skin	Skin	Non-melanoma skin-squamous cell
209.36	Merkle cell carc other sites	Skin	Skin	Non-melanoma skin-squamous cell
230	Ca in situ digestive org			
230.0	Ca in situ oral cav/phar	Highest non-met org/tiss	Thyroid	Oral cav. and pharynx
230.1	Ca in situ esophagus	Esophagus	Esophagus	Esophagus
230.2	Ca in situ stomach	Stomach	Stomach	Stomach
230.3	Ca in situ colon	Colon	Colon	Colon
230.4	Ca in situ rectum	LLI	Colon	Rectum
230.5	Ca in situ anal canal	LLI	Colon	Rectum
230.6	Ca in situ anus nos	LLI	Colon	Rectum
230.7	Ca in situ bowel nec/nos	Colon	Colon	All digestive
230.8	Ca in situ liver/biliary	Liver	Liver	Liver
230.9	Ca in situ gi nec/nos	Highest non-met org/tiss	Remainder ^b	All digestive
231	Ca in situ respiratory			
231.0	Ca in situ larynx	ET2	Esophagus	Other respiratory
231.1	Ca in situ trachea	BB	Thyroid	Lung
231.2	Ca in situ bronchus/lung	Lung	Lung	Lung
231.8	Ca in situ resp sys nec	Medical review	Medical review	Other respiratory
231.9	Ca in situ resp sys nos	Lung	Lung	Other respiratory
232	Carcinoma in situ skin			
232.0	Ca in situ skin lip	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal Cell AND non-melanoma skin-squamous cell ^e
232.1	Ca in situ eyelid	Skin	Skin	Malignant melanoma AND Non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
232.2	Ca in situ skin ear	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
232.3	Ca in situ skin face nec	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
232.4	Ca in situ scalp	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
232.5	Ca in situ skin trunk	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
232.6	Ca in situ skin arm	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
232.7	Ca in situ skin leg	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
232.8	Ca in situ skin nec	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal Cell AND non-melanoma skin-squamous cell ^e
232.9	Ca in situ skin nos	Skin	Skin	Malignant melanoma AND non-melanoma skin-basal cell AND non-melanoma skin-squamous cell ^e
233	Ca in situ breast/gu			
233.0	Ca in situ breast	Breast	Breast	Breast
233.1	Ca in situ cervix uteri	Uterus	Uterus	Female genitalia less ovary
233.2	Ca in situ uterus nec	Uterus	Uterus	Female genitalia less ovary
233.3	Ca in situ fem gen nec	Uterus	Uterus	Female genitalia less ovary AND ovary
233.30	Ca in situ fem gen unspec	Uterus	Uterus	Female genitalia less ovary AND ovary
233.31	Ca in situ vagina	Uterus	Uterus	Female genitalia less ovary AND ovary
233.32	Ca in situ vulva	Skin	Uterus	Female genitalia less ovary AND ovary
233.39	Ca in situ other fem gen	Uterus	Uterus	Female genitalia less ovary AND ovary
233.4	Ca in situ prostate	Highest non-met org/tiss	Bladder	All male genitalia
233.5	Ca in situ penis	Testes	Testes	All male genitalia
233.6	Ca in situ male gen nec	Testes	Testes	All male genitalia
233.7	Ca in situ bladder	Bladder	Bladder	Bladder
233.9	Ca in situ urinary nec	Medical review	Liver	Urinary organs less bladder
234	Ca in situ nec/nos			
234.0	Ca in situ eye	Brain	Eye lens	Eye
234.8	Ca in situ nec	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
234.9	Ca in situ nos	Highest non-met org/tiss	Remainder ^b	Other and ill-defined sites
235	Uncert behav neoplasm gi/resp			
235.0	Uncert behav neoplasm salivary	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav. and pharynx
235.1	Uncert behav neoplasm oral/phar	Highest non-met org/tiss	Thyroid/remainder ^a	Oral cav. and pharynx
235.2	Uncert behav neoplasm intestine (stomach)	Stomach	Stomach	Stomach
235.2	Uncert behav neoplasm intestine (colon)	Colon	Colon	Colon
235.2	Uncert behav neoplasm intestine (rectum)	LLI	Colon	Rectum
235.3	Uncert behav neoplasm liver	Liver	Liver	Liver
235.4	Uncert behav neoplasm peritoneum	Highest non-met org/tiss	Colon	All digestive
235.5	Uncert behav neoplasm gi nec	Colon	Colon	All digestive
235.6	Uncert behav neoplasm larynx	ET2	Esophagus	Other respiratory
235.7	Uncert behav neoplasm lung	Lung	Lung	Lung
235.8	Uncert behav neoplasm pleura	Medical review	Lung	Other respiratory
235.9	Uncert behav neoplasm resp nec	Medical review	Lung	Other respiratory
236	Uncert behav neoplasm gu			
236.0	Uncert behav neoplasm uterus	Uterus	Uterus	Female genitalia, less ovary
236.1	Uncert behav neoplasm placenta	Uterus	Uterus	Female genitalia, less ovary
236.2	Uncert behav neoplasm ovary	Ovaries	Ovaries	Ovary
236.3	Uncert behav neoplasm female nec	Medical review	Uterus	Female genitalia, less ovary
236.4	Uncert behav neoplasm testis	Testes	Testes	All male genitalia
236.5	Uncert behav neoplasm prostate	Highest non-met org/tiss	Bladder	All male genitalia
236.6	Uncert behav neoplasm male nec	Testes	Testes	All male genitalia
236.7	Uncert behav neoplasm bladder	Bladder	Bladder	Bladder
236.9	Uncert behav neoplasm other urinar	Medical review	Liver	Urinary organs less bladder
236.90	Uncert behav neoplasm urinar nos	Medical review	Liver	Urinary organs less bladder
236.91	Uncert behav neoplasm kidney	Kidney	Liver	Urinary organs less bladder
236.99	Uncert behav neoplasm urinar nec	Medical review	Liver	Urinary organs less bladder
237	Uncer neoplasm endocrine/nerv			
237.0	Uncert behav neoplasm pituitary	Brain	Thyroid/remainder ^a	Thyroid
237.1	Uncert behav neoplasm pineal	Brain	Thyroid/remainder ^a	Thyroid
237.2	Uncert behav neoplasm adrenal	Adrenal	Liver	Urinary organs less bladder
237.3	Uncert behav neoplasm paragang	Brain	Thyroid/remainder ^a	Nervous system
237.4	Uncer neoplasm endocrine nec	Medical review	Remainder ^b	Thyroid
237.5	Uncert beh neoplasm brain/spinal	Brain	Thyroid/remainder ^a	Nervous system
237.6	Uncert behav neoplasm meninges	Brain	Thyroid/remainder ^a	Nervous system
237.7	Neurofibromatosis	Medical review	Remainder ^b	Nervous system
237.70	Neurofibromatosis nos	Medical review	Remainder ^b	Nervous system
237.71	Neurofibromatosis type i	Medical review	Remainder ^b	Nervous system
237.72	Neurofibromatosis typ ii	Medical review	Remainder ^b	Nervous system

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
237.9	Uncert beh neoplasm nerv sys nec	Medical review	Remainder ^b	Nervous system
238	Uncert behav neoplasm nec/nos			
238.0	Uncert behav neoplasm bone	Bone surface	Bone surface	Bone
238.1	Uncert behav neoplasm soft tissu	Medical review	Remainder ^b	Connective tissue
238.2	Uncert behav neoplasm skin	Skin	Skin	Malignant melanoma AND Non-melanoma skin-basal cell AND Non-melanoma skin-squamous cell ^e
238.3	Uncert behav neoplasm breast	Breast	Breast	Breast
238.4	Polycythemia	Red bone marrow	Red bone marrow	Bone
238.5	Mastocytoma nos	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
238.6	Plasmacytoma nos	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
238.7	Lymphoproliferat disease nos	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.71	Ess thrombocythemia	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.72	Lowgrade myelodyspl synd	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.73	Highgrade myelodyspl synd	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.74	Hmyelodyspl synd w/5q del	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.75	Myelodyspl synd, unspec	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.76	Myelofibrosis w/myeloid meta	Red bone marrow	Red bone marrow	Bone AND lymphoma and multiple myeloma
238.79	Other lymphatic/hematop tiss	Red bone marrow	Red bone marrow	Bone AND Lymphoma and multiple myeloma
238.8	Uncert behavior neoplasm nec	Medical review	Remainder ^b	Other and ill-defined sites
238.9	Uncert behavior neoplasm nos	Medical review	Remainder ^b	Other and ill-defined sites
239	Unspecified neoplasm			
239.0	Digestive neoplasm nos	Medical review	Stomach	All digestive
239.1	Respiratory neoplasm nos	Medical review	Lung	Lung AND other respiratory
239.2	Bone/skin neoplasm nos (bone)	Bone surface	Bone surface	Bone
239.2	Bone/skin neoplasm nos (skin)	Skin	Skin	Non-melanoma skin-basal cell OR Non-melanoma skin-squamous cell ⁱ
239.3	Breast neoplasm nos	Breast	Breast	Breast
239.4	Bladder neoplasm nos	Bladder	Bladder	Bladder

ICD-9 code	Cancer code explanation	Internal organ	External organ	IREP model
239.5	Other gu neoplasm nos (female)	Medical review	Bladder	Female genitalia less ovary AND ovary AND all urinary organs
239.5	Other gu neoplasm nos (male)	Medical review	Testes	All male genitalia AND all urinary organs
239.6	Brain neoplasm nos	Brain	Thyroid/remainder ^a	Nervous system
239.7	Brain/nerv neoplasm nos	Medical review	Remainder ^b	Nervous system
239.7	Endocrine nos	Medical review	Remainder ^b	Thyroid AND other endocrine glands
239.8	Neoplasm nos, site nec	Medical review	Remainder ^b	Other and ill-defined sites
239.81	Neoplasm nos, retina/choroid	Medical review	Remainder ^b	Other and ill-defined sites
239.89	Neoplasm nos, other spec sites	Medical review	Remainder ^b	Other and ill-defined sites
239.9	Neoplasm nos	Medical review	Remainder ^b	Other and ill-defined sites
258.02	Multiple endocrine neo [men] type IIA	Thyroid	Thyroid	Thyroid
273	Disorders of plasma protein metabolism			
273.3	Waldenstrom's macroglobulinemia	Red bone marrow	Red bone marrow	Lymphoma and multiple myeloma
289	Other specified blood disorder			
289.7	Essential thrombocytosis	Red bone marrow	Red bone marrow	Bone
289.8	Other specified diseases of blood and blood-forming organs	Red bone marrow	Red bone marrow	Bone
289.81	Primary hypercoag state	Red bone marrow	Red bone marrow	Bone
289.82	Secondary hypercoag state	Red bone marrow	Red bone marrow	Bone
289.83	Myelofibrosis	Red bone marrow	Red bone marrow	Bone
289.89	Unspecified diseases of blood and blood-forming organs	Red bone marrow	Red bone marrow	Bone
289.9	Essential thrombocythemia	Red bone marrow	Red bone marrow	Bone

- a. See discussion in Section 4.3
- b. See discussion in Section 4.4
- c. For secondary cancers, doses are assessed for the likely primary cancer site(s), which are selected using guidance in Table 3-2.
- d. 42 CFR 81.30 states this cancer is nonradiogenic for the purposes of EEOICPA and assigns a POC of zero.
- e. For ICD-9 codes 232 and 238.2, if the type of cancer is specified by DOL ("Malignant melanoma, Non-melanoma skin-Squamous cell, or Non-melanoma skin-Basal cell"), use only the specified IREP model (note that Bowen's disease is another name for squamous cell carcinoma *in situ*). If the cancer is not specified, run all listed IREP models as discussed in Section 4.6.
- f. See discussion in Section 4.8
- g. The external target organ should be lung if the lymphoma is known to be a B-cell variety, or thymus if the lymphoma is known to be a T-cell variety or if the variety is unknown.
- h. For ICD-9 code 155.1, for cancers that are described as cancer of the intrahepatic ducts, select liver as the internal organ. For those that are described as gallbladder carcinoma, select gallbladder as the internal organ. If the description is unclear, a medical review should be conducted to determine the appropriate internal organ of interest.
- i. See discussion in Section 4.7

Table 3-2. Selection of primary cancer(s) for dose reconstruction from secondary cancer codes.

Secondary cancer	ICD-9 code of likely primary cancers ^{a,b,c}
196.0 Lymph nodes of head, face, and neck	141, 142(M), 146(M), 149(F), 161(M), 162, 172, 173, 174(F), 193(F)
196.1 Intrathoracic lymph nodes	150(M), 162, 174(F)
196.2 Intra-abdominal lymph nodes	150(M), 151(M), 153, 157(F), 162, 174(F), 180(F), 185(M), 189, 202(F)
196.3 Lymph nodes of axilla and upper limb	162, 172, 174(F)
196.5 Inguinal and lower limb lymph nodes	154(M), 162, 172, 173(F), 187(M)
196.6 Intrapelvic lymph nodes	153(M), 154(F), 162(M), 180(F), 182(F), 185(M), 188
196.8 Lymph nodes of multiple sites	150(M), 151(M), 153(M), 162, 174(F)
196.9 Lymph nodes, site unspecified	150(M), 151, 153, 162, 172, 174(F), 185(M)
197.0 Lung	153, 162, 172(M), 174(F), 185(M), 188(M), 189
197.1 Mediastinum	150(M), 162, 174(F)
197.2 Pleura	150(M), 153(M), 162, 174(F), 183(F), 185(M), 189(M)
197.3 Other respiratory organs	150, 153(M), 161, 162, 173(M), 174(F), 185(M), 193(F)
197.4 Small intestine, including duodenum	152, 153, 157, 162, 171, 172(M), 174(F), 183(F), 189(M)
197.5 Large intestine and rectum	153, 154, 162, 174(F), 183(F), 185(M)
197.6 Retroperitoneum and peritoneum	151, 153, 154(M), 157, 162(M), 171, 174(F), 182(F), 183(F)
197.7 Liver, specified as secondary	151(M), 153, 154(M), 157, 162, 174(F)
197.8 Other digestive organs	150(M), 151, 153, 157, 162, 174(F), 185(M)
198.0 Kidney	153, 162, 174(F), 180(F), 185(M), 188, 189, 202(F)
198.1 Other urinary organs	153, 174(F), 180(F), 183(F), 185(M), 188, 189(F)
198.2 Skin	153, 162, 171(M), 172, 173(M), 174(F), 189(M)
198.3 Brain and spinal cord	162, 172(M), 174(F)
198.4 Other parts of nervous system	162, 172(M), 174(F), 185(M), 202
198.5 Bone and bone marrow	162, 174(F), 185(M)
198.6 Ovary	153(F), 174(F), 183(F)
198.7 Suprarenal gland	153(F), 162, 174(F)
198.8 Other specified sites	153, 162, 172(M), 174(F), 183(F), 185(M), 188(M)
511.81 Malignant pleural effusion	150(M), 153(M), 162, 174(F), 183(F), 185(M), 189(M)
789.51 Malignant acsites	151, 153, 154(M), 157, 162(M), 171, 174(F), 182(F), 183(F)

a. "M" indicates cancer site should be used for males only; "F" indicates cancer site should be used for females only.

b. For likely primary cancer sites that have multiple possible IMBA or external organs, see Section 4.9.

c. If "173" is indicated as a likely primary cancer, the "non-melanoma skin-basal cell (BCC)" model should be used.

REFERENCES

- DHHS (U.S. Department of Health and Human Services), 2008, *International Classification of Diseases, Ninth Revision, Clinical Modification*, Centers for Medicare and Medicaid Services and National Center for Health Statistics, Hyattsville, Maryland, October 1, <http://www.cdc.gov/nchs/about/otheract/icd9/abtcd9.htm>.
- DHHS (U.S. Department of Health and Human Services), 2009, *Conversion Table of New ICD-9-CM Codes*, Centers for Medicare and Medicaid Services and National Center for Health Statistics, Hyattsville, Maryland, October. [SRDB Ref ID: 71531]
- ICRP (International Commission on Radiological Protection), 1979, *Limits for the Intake of Radionuclides by Workers, Part 1*, Publication 30, Part 1, Pergamon Press, Oxford, England.
- ICRP (International Commission on Radiological Protection), 1994, *Human Respiratory Tract Model for Radiological Protection*, Publication 66, Pergamon Press, Oxford, England.
- NIOSH (National Institute for Occupational Safety and Health), 2002, *Internal Dose Reconstruction Implementation Guideline*, OCAS-IG-002, Rev. 0, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Cincinnati, Ohio, August 1.
- NIOSH (National Institute for Occupational Safety and Health), 2006, *Selection for Internal and External Dosimetry Target Organs for Lymphatic/Hematopoietic Cancers*, OCAS-TIB-0012, Rev. 1, Office of Compensation Analysis and Support, Cincinnati, Ohio, February 10.
- ORAUT (Oak Ridge Associated Universities Team), 2005, *Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures*, ORAUT-OTIB-0006, Rev. 03 PC-1, Oak Ridge, Tennessee, December 21.
- WHO (World Health Organization), 1977, *International Classification of Diseases, Ninth Revision*, World Health Assembly, Geneva, Switzerland.